2005-12

Feasibility analysis of adopting Medicare's health prospective payment system for TRICARE beneficiaries treated in inpatient psychiatric facilities

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

Feasibility Analysis of Adopting Medicare's Mental Health Prospective Payment System for Tricare Beneficiaries Treated in Inpatient Psychiatric Facilities

---

By: LT Nigel Carr
LT Dennis Nagle
LT Jared Taylor
December 2005

Advisor: Yu-Chu Shen
Second Reader: Richard Doyle

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE	Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	December 2005	MBA Professional Report

4. TITLE AND SUBTITLE: Feasibility Analysis of Adopting Medicare's Mental Health Prospective Payment System for Tricare Beneficiaries Treated in Inpatient Psychiatric Facilities.	5. FUNDING NUMBERS
6. AUTHOR(S) LT Carr, LT Nagle, LT Taylor	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS Naval Postgraduate School Monterey, CA 93943-5000	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME ANDADDRESS TRICARE Management Activity, Aurora, CO	10.SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this report are those of the author(s) and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a.DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited	12b. DISTRIBUTION CODE

13. ABSTRACT

This project will examine the feasibility of implementing Medicare's mental health prospective payment system (PPS) for Tricare beneficiaries treated in inpatient psychiatric facilities. Background information will be presented on both Tricare's current per diem system and Medicare's mental health PPS to facilitate a comparison of the systems. Specifically, a financial analysis will be performed to determine if the adoption of Medicare's mental health PPS can be a cost savings measure for the Department of Defense. This project will compare payments for mental diagnoses under the per diem system and PPS. The anticipated product of this project is a proposal to Tricare Management Activity, Aurora, CO to either implement Medicare's mental health PPS or to stay with the current system. The premise for adopting Medicare's mental health PPS would be to demonstrate potential for tangible cost savings over the current system. Should this project demonstrate the potential for little or no cost savings then the recommendation would be to reject Medicare's mental health PPS.

14. SUBJECT TERMS Per diem, Medicare, prospective payment, PPS, inpatient psychiatric facility, IPF, Tricare, mental health.	15. NUMBER OF PAGES 85
	16.PRICE CODE

17.SECURITY CLASSIFICATION OF REPORT	18.SECURITY CLASSIFICATION OF THIS PAGE	19.SECURITY CLASSIFICATION OF ABSTRACT	20.LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

FEASIBILITY ANALYSIS OF ADOPTING MEDICARE'S MENTAL HEALTH PROPECTIVE PAYMENT SYSTEM FOR TRICARE BENEFICIARIES TREATED IN INPATIENT PSYCHIATRIC FACILITIES

Nigel Carr, Lieutenant, United States Navy
Dennis Nagle, Lieutenant, Unites States Navy
Jared Taylor, Lieutenant, Unites States Navy

Submitted in partial fulfillment of the requirements
for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

NAVAL POSTGRADUATE SCHOOL
December 2005

Authors: _____
Nigel Carr

_____
Dennis Nagle

_____
Jared Taylor

Approved by:

_____
Yu-Chu Shen

_____
Richard Doyle

_____
Robert N. Beck, Dean Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

This project examines the feasibility of implementing Medicare's mental health prospective payment system (PPS) for Tricare beneficiaries treated in inpatient psychiatric facilities (IPF). Background information is presented on Tricare's current per diem system and Medicare's mental health PPS to facilitate a comparison between the two systems. This project compares 14 specific mental health diagnosis related groups (DRG) under the per diem system and PPS. Using Medicare's methodology for reimbursement, 1400 Tricare patient encounters were calculated. The calculation was then compared to the current per diem reimbursement amount. It was determined that a significant cost savings could not be identified. In fact, Tricare's reimbursement would increase approximately 11 percent under PPS. No evidence was found to support a decision to convert from Tricare's per diem payment system to Medicare's PPS.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

Christine Covie, MSHA, PMP, Healthcare Reimbursement Specialist, Medical Benefits and Reimbursements Systems, Tricare Management Activity, Aurora, Colorado.

Jim Vanlandingham, Reimbursement Coordinator, Financial Systems, Community Hospital of the Monterey Peninsula, Monterey, California.

Matthew Quarrick, Social Science Research Analyst, Centers for Medicare and Medicaid Services, Baltimore Maryland.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. OVERVIEW

Since October 1987, Tricare (then entitled the Civilian Health and Medical Program of the Uniformed Services, or CHAMPUS) has employed a prospective payment system (PPS) applied on a per discharge basis for the vast majority of inpatient hospital services (Zwanziger, 1992). Inpatient psychiatry, however, was one of a few services exempted from PPS at this time. This was primarily due to the failure to build a model which successfully explained the significant variability of costs in treating these types of visits. CHAMPUS thus instituted a flat per-diem payment system, with regional and volume adjustments, for inpatient psychiatric facilities (IPF).

After many years and considerable research, models have been constructed which help explain the variability of IPF costs. Medicare began its transition to a PPS for IPFs on January 1, 2005. Having used Medicare's PPS as a model for its payment system, Tricare is now considering the ramifications of following Medicare's lead again for IPF reimbursement. The Tricare Management Activity (TMA), which administers the Tricare health benefit, has sponsored this MBA project to predict if cost savings can be realized by converting its IPF payment policy.

THIS PAGE INTENTIONALLY LEFT BLANK

II. PROJECT SCOPE AND OBJECTIVES

From 1965 until 1983, Medicare payment for inpatient hospital services was based on the reasonable costs incurred in furnishing services to Medicare beneficiaries. Congress directed the implementation of a PPS for acute care in 1983. Although most inpatient hospitals became subject to PPS, certain specialty hospitals were excluded from it and continued to be paid reasonable costs. These specialty hospitals included psychiatric hospitals and psychiatric units in acute care. In January of 2005, Medicare began requiring all inpatient psychiatric facilities to implement PPS.

As a result of this new directive, TMA-Aurora (based in Aurora, Colorado) became interested in exploring the potential cost savings that may exist through implementing a mental health PPS within DoD inpatient psychiatric facilities in place of the current per diem system.

The objectives of this MBA project are three fold. The first step is to simply obtain the data from TMA. Second, calculate what the PPS payment would have been if that system were used for reimbursement by TMA. The formula calculation will be based on the "Medicare Program; Prospective Payment System for Inpatient Psychiatric Facilities; Final Rule", published by Department of Health and Human Services on November 15, 2004. Third, compare the amount allowed under the current per diem system, to the PPS payment for possible cost savings if they exist. In the process of developing the PPS amount, limitations were found which inhibit the results. A further discussion

of these limitations will be elaborated on in Chapter VII: Limitations and Adjustments.

The data used in conducting this feasibility analysis was provided by TMA. The data fields needed to construct a PPS payment were determined to be; geographic region by zip code where the care was provided, patient age, DRG, comorbidity, length-of-stay, and any rural locations. Once these data fields were known a simple formula was developed which is applied to the different provisions listed above to generate a cost factor for PPS. The formula will be explained in further detail in Chapter V: Methodology.

III. BACKGROUND INFORMATION

This chapter discusses the Tricare inpatient mental health per diem system and the Medicare IPF PPS. Firstly, it discusses how the Tricare inpatient mental health per diem system is used and to which psychiatric facilities it may be applied. It discusses the different types of per diem rates that are currently being used, highlighting special circumstances and gives a brief discussion of the exemptions to this per diem system. Secondly, this chapter introduces the Medicare PPS. It discusses the payment methods in place prior to Medicare's IPF PPS and gives a timeline of the laws that prompted the change to Medicare's PPS. Also, there is a comprehensive discussion of the diagnosis related group (DRG) and its importance to the Medicare PPS. This chapter concludes with a comparison of Tricare's per diem payment system and Medicare's PPS, explaining key differences and highlighting areas for concern with Tricare's per diem payment system that justifies the desire to adopt Medicare's PPS.

A. TRICARE INPATIENT MENTAL HEALTH PER DIEM PAYMENT SYSTEM

The Tricare inpatient mental health per diem payment system is currently used to reimburse inpatient mental health care provided in specialty psychiatric hospitals and psychiatric units of general acute hospitals that are exempt from the DRG-based payment system (Tricare Reimbursement Manual 6010.55 (TRM), 2002). This per diem payment system uses a hospital specific per diem rate and a regional per diem rate to reimburse IPFs. The hospital-

specific per diem rate applies to psychiatric hospitals and psychiatric units of general acute hospitals with total discharges of 25 or more Tricare mental health inpatients per federal fiscal year. Psychiatric hospitals and psychiatric units of general acute hospitals that discharge fewer than 25 Tricare mental health inpatients per federal fiscal year use regional per diems, with adjustments for area wage differences, indirect medical education costs, and additional pass-through payments for direct medical education costs (TRM, 2002).

The Tricare mental health per diem payment system is used to reimburse Medicare PPS exempt psychiatric hospitals and Medicare PPS exempt psychiatric specialty units of other hospitals for services[1]. Any psychiatric hospital or psychiatric specialty unit that does not participate in Medicare must demonstrate its status as a DRG exempt hospital or unit to participate in the Tricare inpatient mental health per diem payment system. Further, the Tricare inpatient mental health per diem system does not reimburse for mental health services provided in non-psychiatric hospitals or non-psychiatric units (TRM, 2002). Also, substance use disorder rehabilitation facilities would not be reimbursed under the inpatient mental health per diem payment system. Specifically, all inpatient claims which are classified within a mental health DRG of 425 through 432, or a substance use disorder DRG of 433, DRGs 521, 522, 523, and DRGs 012,023, 900 and 901 shall be

[1] 42 CFR Parts 412 and 413 Medicare Program; Prospective Payment System (PPS) for Inpatient Psychiatric Facilities; Final Rule established a PPS for Medicare payment of inpatient psychiatric hospital services furnished in hospitals and psychiatric units of acute care hospitals and critical access hospitals which became effective 1 January 2005.

reimbursed under the Tricare inpatient mental health per diem payment system (TRM, 2002).

In order for a per diem payment to be made, the patient must have preauthorization to be admitted to one of Tricare's participating mental health IPFs before non emergent admissions, or must certify that admission was in an emergent condition within 72 hours of being admitted (Tricare Policy Manual (TPM) 6010.54, 2002). Prompt continued stay authorization is required after emergency admissions. Preauthorization is satisfied when the patient is evaluated by an authorized licensed, qualified mental health physician or authorized health care provider with admitting privileges to the facility to which the patient has presented prior to admission. The patient must be diagnosed to be suffering from a mental disorder according to the criteria found in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition DSM-IV (TPM, 2002).

An example of a per diem rate system in the health care industry is a payment system where a medical facility is granted a specific amount of money per day for care provided to each patient. Most often, this is an agreement between the government and the medical treatment facility, where the facility provides care to eligible patients for a flat daily rate. The incentive for the medical facility is to provide care at a cost that is less than the government per diem rate. If this can be done, then the facility can make a profit. However, if the daily cost of care exceeds the per diem rate, then the medical facility has the option to seek payment from a secondary health insurance provider, the patient, or absorb the extra cost with no further expense to the government. As a motivating measure to

expedite care, the per diem rate is sometimes decreased as the length of stay increases. A simple example is an agreement between the government and a medical treatment facility for care provided at a rate of $165/day for the first 10 days, decreasing to $105/day for each day after the 10th day. For a patient that stays 12 days under this agreement, the government will pay the treatment facility (165 X 10) + (105 X 2), for a total of $1,850.

A more realistic example from the sample of observations used for this analysis is a 14 year old female treated at an IPF facility in Hawaii for three days. She is diagnosed with Depressive Neurosis (DRG 426) and has a comorbidity of anorexia nervosa (ICD-9CM 3071). Tricare reimbursed the IPF $1,820.95. This figure should be the product of the per diem rate multiplied by the number of days in the facility. The amount reimbursed depends on if the hospital receives a hospital-specific per diem rate or a regional per diem rate. In comparison, based on the analysis performed, this facility would have been reimbursed $2904.00 under the Medicare PPS. Another example and comparison with Medicare's PPS is a 14 year old female treated at an IPF in Colorado for 15 days. She is diagnosed with Neurosis, except depressive (DRG 427), and has zero comorbidities. The Tricare per diem payment system reimbursed $8,625 while Medicare PPS would have reimbursed $8,945.

1. Hospital-Specific Per Diem Rates

A hospital-specific per diem amount is computed for each psychiatric hospital or psychiatric unit of a general acute hospital with 25 or more Tricare mental health

discharges per federal fiscal year. IPFs with a discharge volume of 25 or more mental health inpatients are called higher volume hospitals or units. The base per diem amount for each high volume IPF is calculated using historical charges. It is set at the facility's average daily charge for services allowed by the government in the base period between 1 July 1987 and 31 May 1988 (TRM, 2002). The average daily charge in the base period for each facility is determined with reference to all Tricare claims processed at that facility during the base period. The per diem amount for each year after the base period year is determined by multiplying the base year per diem by the annual Medicare update factor for hospitals and units that are exempt from the Medicare PPS.

For example, the update factor for the base year will always be one. The update factor for the next year will be $1 * (1 + U_1)$, where U_1 is the amount of inflation observed. For the second year after the base year the update factor will be $1 * (1 + U_1) * (1 + U_2)$. Therefore, the per diem amount for the second year after the base year will be equal to the base period per diem amount multiplied by $1 * (1 + U_1) * (1 + U_2)$. However, the per diem amount for an IPF in a given year cannot exceed the government cap, which is set at the 70^{th} percentile for all IPFs that participate in the Tricare inpatient mental health per diem system for that year. The calculated per diem rate may be contested if an IPF determines that TMA has computed a hospital-specific per diem rate that differs by more than five dollars from the rate calculated by the facility. However,

if the IPF's calculated rate exceeds the government cap, then the government cap amount is used as the hospital-specific per diem rate.

In any fiscal year where a psychiatric hospital or unit not previously classified as a higher volume hospital discharges 25 or more Tricare mental health inpatients, that hospital or unit shall be classified as a higher volume hospital starting with the next fiscal year and for all succeeding fiscal years. In such circumstances, that hospital's base period charge shall be its average daily charge in the year in which it had 25 or more Tricare mental health discharges, adjusted by the percentage change in average daily charges for all higher volume hospitals and units between the year in which it had 25 or more Tricare mental health discharges and the base period (TRM, 2002).

However, the base period amount cannot exceed the cap set by the government for higher volume psychiatric hospitals and units. This established base period amount becomes the basis for all future rates regardless of the number of Tricare mental health discharges per fiscal year.

For new hospitals, the Tricare mental health per diem payment is calculated using the same method described above. A new hospital is one which meets the requirements of the Tax Equity and Fiscal Responsibility Act (TEFRA) rules and has operated as a psychiatric specialty hospital or general acute hospital with a psychiatric unit, for which it is certified in the Medicare and Tricare programs, under the present and previous ownership for fewer than three full years.

2. Regional Per Diem Rates

Psychiatric hospitals and general acute hospitals with psychiatric units that have a discharge volume of fewer than 25 Tricare mental health inpatients shall be paid on the basis of a regional per diem amount, adjusted for area wages and indirect medical education (TRM, 2002). IPFs with a discharge volume of fewer than 25 mental health inpatients are called lower volume hospitals or units and are divided into nine federal census regions. The base period regional per diem shall be calculated based upon all Tricare/lower volume hospitals' and units' claims paid during the base period between 1 July 1987 and 31 May 1988. Each regional per diem rate represents the average daily charges across all low-volume hospitals in a given census region adjusted for indirect medical education costs and area wage indices (TRM, 2002).

The indirect medical education adjustment factors shall be calculated for teaching hospitals in the same manner as in the DRG-based payment system and applied to the regional per diem rate for each day of patient admission. In cases where an exempt psychiatric unit exists in a teaching hospital and medical education adjustment factors apply to that unit, an indirect medical education adjustment factor that is separate from the rest of the hospital will apply for that unit (TRM, 2002). Additionally, the government will reimburse lower volume psychiatric hospitals and units for direct medical education costs associated with Tricare beneficiaries. These costs are reimbursed in the same manner as the DRG-based payment system.

Regional per diem rates are adjusted for area wage indexes. The wage index measures the relative difference between the average hourly wage for the hospitals in each regional labor market and the national average hourly wage (Centers for Medicare and Medicaid Services (CMS), 2005). This is intended to adjust for cost of living differences. The labor-related portion of the regional per diem amount (about 72 percent for fiscal year 2005) is adjusted for differences in wage costs between geographic areas. The wage index values are based on wage data as reported by hospitals on their annual cost reports. The wage data used to construct the wage index are updated annually.

Regional per diem rates are updated by the Medicare update factor previously described, for hospitals and units exempt from the Medicare PPS. The actual amount for each regional per diem that will be granted in any federal fiscal year is published in the Federal Register prior to the start of the fiscal year.

The Tricare mental health inpatient per diem system does not reimburse psychiatric hospitals or units for any day in which the patient is absent (including therapeutic absences) from the facility. These days must be clearly identified by the facility when claiming reimbursement. Also, the government will not count a patient's departure for leave of absence as a discharge in determining the classification of a hospital or unit as high/low volume hospital. For example, if a patient has to temporarily leave the psychiatric hospital or unit to be treated for a non-psychiatric condition at another treatment facility, this departure is not considered a discharge, provided the

patient returns to the facility. The length of stay during departure is not significant.

3. Exemptions to TRICARE Per Diem Payment System

Admissions to psychiatric hospitals and units for DRG 424 are exempt from the Tricare mental health per diem payment system. Tricare considers this DRG a "dumping ground" that IPFs use for patients that would not otherwise meet the criteria for reimbursement under another appropriate DRG.

B. HISTORICAL BACKGROUND FOR PROSPECTIVE PAYMENT SYSTEM

In 1965, Medicare's payment for healthcare services was based on the reasonable costs incurred in furnishing services to Medicare beneficiaries. PPS was created by the federal government to replace the reasonable-cost-based system in October of 1983. Under the reasonable-cost-based system, health care facilities were given an open check book, basically receiving reimbursement for whatever it cost to provide care. The healthcare industry created additional demand for services by simply providing them. The increase in demand and a policy of reimbursing full cost drove the cost of healthcare to double digit growth in the early 1980's.

> Medicare spending in 1983 totaled some $35 billion, more than double the $14.8 billion in 1975 (Tieman, 2003).

Under PPS, hospitals would receive a fixed amount for a given episode of disease regardless of the length of stay

or type of care received. This new reimbursement philosophy would place responsibility for controlling costs on the treating facility.

PPS had its beginning at Yale University, where Robert Fetter first developed the DRG. His development of DRGs was initially used as a quality comparison tool (Tieman, 2003). In the late 1970's PPS was being used as a pilot program in a New Jersey hospital. The Health Care Financing Administration (HCFA), under the Reagan Administration, liked this new payment method that used DRGs to set the rate for a given service and paid hospitals that rate no matter what they actually spent providing the service.

> Under the DRGs, standard payments are made for each type of admission, rather than varying payments to cover the actual cost of admission. If it costs less to treat the patient then the government pays for that treatment, if it costs more the hospital has to make up the difference (Tieman, 2003).

On October 1, 1983 HCFA was directed to change from a retrospective fee-for-service system to a PPS for general short-stay acute hospitals by Public Law 98-21 of the Social Security Amendments of 1983, Section 1886.

However, when PPS was first implemented in 1985 it only applied to general short-stay acute hospitals. Specialty healthcare entities were exempt from participating in PPS because the DRG did not accurately account for the resource cost for the types of patients treated in those facilities. The exempted facilities were paid according to Section 1886(b) of the Social Security Act, as amended by Section 101 of the TEFRA of 1982. These

facilities have often been referred to as TEFRA facilities (Cotterill, Thomas 2004).

The Balanced Budget Act of 1997 required that some TEFRA facilities change to a PPS. Those facilities required to change included skilled nursing facilities, hospital outpatient departments, home health agencies, and long-term care rehabilitation facilities. In 1999, Congress, through the Balanced Budget Refinement Act, Section 124, mandated that CMS (formerly HCFA) develop a Medicare PPS for psychiatric hospitals and psychiatric units in acute general hospitals (Covall, 2005). Section 124 of the Balanced Budget Refinement Act mandated that CMS develop a per diem PPS for inpatient psychiatric services performed in IPFs (Federal Register, 2004).

1. Diagnosis Related Groups

DRGs form the cornerstone of PPS. As a result, it is important to take a closer look at the way in which they affect payments in the PPS framework.

Professor Fetter's work with DRGs started with a desire to compare clinical outcomes between hospitals. The data he used in his research was the International Classification of Disease codes (ICD-9). Once his research began, he became frustrated by the large number of similar codes. To make the data more manageable he combined all the similar codes into groups. The result was the combination of 18,000 medical and 5,000 surgical codes into about 700 DRGs. There are currently about 506 DRGs in use by Medicare.

DRGs are categories of patient conditions that demonstrate similar levels of hospital resources required to treat the conditions presented (Baker, 2002). When a patient is discharged from a hospital, the patient will be given one of the 506 DRGs assignable. All DRGs can be assigned to either "surgical" or "medical". As the name implies, surgical DRGs are assigned when surgery is performed. The particular surgery performed is identified by procedure codes. Medical DRGs represent the cases where surgery was not performed. Although there are over 200 DRGs for surgery, the DRGs that occur most frequently and account for the greatest volume are medical in nature.

Assigning DRGs to a patient involves five steps. In the first step a patient's principle diagnosis is annotated using the ICD-9 coding system. The second step involves documenting the presence (if any) of certain pre-defined secondary diagnoses, complications or comorbidities. Documenting secondary diagnoses and comorbidities is important because they generally affect the treatment received and/or the patient's length of stay. A complication is defined as having occurred when the length of stay increases by at least one day. A comorbidity is defined as a preexisting condition that, due to its presence in a particular disease, has increased the length of stay by at least one day. The third step identifies the presence or absence of surgery as identified by procedure codes. The fourth step takes into account the age of the patient (the only demographic data item). The age designation is either "greater than 17 years of age" or "zero to 17 years of age". The fifth step looks into the

discharge status (basically, determining if the patient was discharged alive).

A DRGs relative weight is the average cost of resources required to care for inpatients within a DRG category compared to the average cost of resources for inpatients within all DRGs. Each DRG is assigned a relative weight. If a DRG is assigned a relative weight of 1.000 that means the resource consumption for that specific disease is average. If the relative weight is higher than 1.000, it is considered more costly, and anything less than 1.000 is considered less costly. The relative weights for a DRG are calculated by CMS and published annually (Baker, 2002). Table 1 lists the inpatient psychiatry DRGs which Tricare reimburses and the relative weights associated with each one.

Table 1. Inpatient Psychiatric DRGs

Degenerative Nervous System Disorders	DRG 012	1.05
Non-traumatic Stupor & Coma	DRG 023	1.07
Acute Adjustment Reaction	DRG 425	1.05
Depressive Neurosis	DRG 426	0.99
Neurosis Except Depressive	DRG 427	1.02
Disorders of Personality	DRG 428	1.02
Organic Disturbances	DRG 429	1.03
Psychosis	DRG 430	1.00
Childhood Disorders	DRG 431	0.99
Other Mental Health Disorders	DRG 432	0.92
Alcohol/Drug Use (LAMA)	DRG 433	0.97
Alcohol/Drug Use with comorbid conditions	DRG 521	1.02
Alcohol/Drug Use without comorbid condition	DRG 522	0.98
Alcohol/Drug without rehabilitation	DRG 523[2]	0.88
Alcohol/Drug without rehabilitation (≤Age 21)	DRG 900	0.88
Alcohol/Drug without rehabilitation (>Age 21)	DRG 901	0.88

[2] TRICARE reassigns DRG 523 cases into either a DRG 900 or DRG 901 classification, based upon patient age on date of admission. (TRM 2002)

Patient characteristics that affect the PPS payment calculation include adjustments for a patient's age, comorbidities, length of stay, and a one-time payment if electroconvulsive therapy (ECT) procedure was performed. Facility characteristics that affect the PPS payment calculation include an adjustment for a rural location, an adjustment for a hospital designated as a teaching hospital, a wage index adjustment, and Cost of Living Adjustments (COLA) for Hawaii and Alaska. Further attention to the specific characteristics of these adjustments will be addressed in greater detail in Chapter V: Methodology.

The basis behind using DRGs for prospective payment is to provide incentives for healthcare providers to contain costs. In PPS, a healthcare facility will know up front the reimbursement rates for any given diagnosis. It is then the responsibility of the treating facility to provide care in a cost effective manner. Actual costs of providing care are compared to the reimbursement rate; if the actual costs are less, the treating facility will make a profit. However, if the costs are in excess of the rate the treating facility will have to absorb the costs. The idea is that hospitals will cross-subsidize high-cost cases with low-cost cases. As a result, hospitals have incentives to contain the costs of providing care that did not exist in the reasonable cost structure that was in use before 1983.

C. DIFFERENCES OF PER DIEM AND PROSPECTIVE PAYMENT SYSTEMS

As suggested in the above sections, the per diem payment system which Tricare uses to reimburse IPFs differs significantly from a DRG-based PPS. Most notably, Tricare

calculates its per diem payments based upon a daily average of allowed charges for all psychiatric discharges of Tricare mental health patients during a certain base period. As a result, the calculated per diem payment is a function of the specific mix of the associated mental health patient morbidities during that base period. Because IPF consumption of resources can vary significantly based upon the specific condition being treated, patient mixes that differ substantially from the base period can have a considerable effect on a hospital's bottom line. Such a payment system may also motivate behavioral changes, such as hospitals encouraging less costly admissions and subsequently discouraging expensive admissions.

An additional concern of Tricare's per diem payment system is its failure to account for the different levels of hospital resources required during different portions of inpatient stays. Hospitals typically incur higher costs in the earliest days of treatment. Although some per diem payment systems are tiered to account for these higher costs, Tricare's per diem payment is constant for each day of treatment. Thus, as well as being a function of the base period's morbidity mix, Tricare's calculated per diem rate is also related to the average length of stay (LOS) during the base period. The table below provides a simple hypothetical example of how constant per diem rates can differ based upon varying LOS, given that hospitals' per diem consumption of resources decreases as LOS increases:

Table 2. Per Diem Cost Comparison

	Hospital Costs				
	Day 1	Days 2-4	Days 5+	Average LOS	Base Per Diem Amount
Hosp A	$500	$400	$300	8 days	(500+(3*400)+(4*300))÷ 8 = **$362.50**
Hosp B	$500	$400	$300	12 days	(500+(3*400)+(8*300)÷ 12 = **$341.67**

In this example, although both hospitals have identical costs for corresponding days of inpatient care, the difference in the average LOS leads to a different per diem amount. Although these amounts accurately reflect the costs associated with the care provided in the base year, they inhibit the incentive for these facilities to reduce LOS in subsequent years, as a reduction in LOS will result in losses (e.g., a 10-day stay will cost Hospital B $3500, but provide only $3,417 revenue, for a loss of $83). Alternately, facilities will have the incentive to increase LOS, as every additional day beyond the facilities' average LOS results in a relatively generous overpayment (e.g., $62.50 daily profit for days 9 and beyond for Hospital A).

The IPF PPS addresses both concerns identified above. Like other PPS systems, it accounts for variability of resource consumption by allocating different amounts which correspond to the expected level of resources required to treat specific conditions. As already discussed, the DRG is considered the explanatory factor when it comes to expected resource consumption for inpatient hospital care. However, the research conducted in the effort to explain IPF costs failed to develop a model which sufficiently explained cost variation on a per discharge basis. Thus, a

per diem PPS with variable adjustments to recognize the declining daily costs of treatment became the model which Medicare adopted.

An additional difference between the two payment methods involves same day stays. Although Medicare paid for these stays under the TEFRA system, PPS does not count the first day until midnight. Thus, same day stays will not receive payment under PPS, although they do receive payment under Tricare's per diem payment system. This factor applied to 14 stays within the data sample of 1400 analyzed records.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. DATA SOURCES

A total of 3,085 observations were provided in the sample data. They include the claims of real patients hospitalized and treated between the dates of October 1, 2004 and March 31, 2005. Permission to use this data was granted by TMA-Aurora. A copy of the Data Use Agreement, signed by all team members and the project advisors is on file at the Tricare Privacy Office, Skyline Five, Suite 810A, 5111 Leesburg Pike, Falls Church VA, 20041. These observations are taken from the Tricare Encounter Data System (TEDS) and the Health Care Service Record (HCSR) database. The TEDS database is maintained for contracts that make up the Next Generation of Tricare contracts (TNEX). The HCSR database is maintained for the initial Tricare contracts which are not part of TNEX.

The sampling criterion was directed to obtain observations localized to military catchment areas in the United States, as opposed to Metropolitan Statistical Areas (MSA), with admitting DRGs of 425, 426, 427, 428, 429, 430, 431, 432, 433, 521, 522, 523, 012, 023, 900, and 901. A complete list of DRGs with their corresponding description can be found on Table 1. A military catchment area is an area which includes the zip codes within a 40 mile radius of a military treatment facility (MTF). The rationale for restricting the sample of this criterion is that the military inpatient psychiatric population tends to be concentrated in military catchment areas. Military catchment areas do not uniformly map into MSA codes, as military catchment area can easily span several MSA codes. Observations are taken from the military catchment areas in

and around the following cities: Jacksonville Florida, Colorado Springs Colorado, San Antonio Texas, Norfolk Virginia, Atlanta Georgia, Honolulu Hawaii, Bethesda Maryland, and Washington DC. These areas were chosen because they represent greater than 50 percent of all Tricare medical institutional claims. The premise is that the areas with high concentration of medical institutional claims will have the highest concentration of inpatient psychiatric claims. The assumption is made that the sampling criterion used will gave a sample distribution of Tricare inpatient psychiatric patients that represents greater than 50 percent of the Tricare inpatient psychiatric population.

The sampling criterion specified the above listed DRGs because Tricare will only reimburse claims for inpatient psychiatric care given at a psychiatric hospital or a general hospital with a psychiatric unit to Tricare beneficiaries diagnosed to be suffering from a primary diagnosis of one of the above DRGs.

In preparing the data for analysis, 958 records were excluded because they did not include an "amount paid" by Tricare. For such observations it is assumed that there was no authorization granted before care was given. Tricare did not reimburse the treating facility for rendering care to the patient. It is understood that even if Tricare adopts the Medicare PPS, if authorization for care is not granted then, similarly, no reimbursement will be made.

Analysis of the data discovered several duplicate records which were excluded from analysis. Other records demonstrated multiple claims on the same patient with

matching dates of care, but different Tricare payments. Further discussion with TMA revealed that these records likely represented different claims associated with the same hospitalization (such as additional permitted ancillary services), for which Tricare made separate payments. These payments were combined to accurately represent Tricare's total payments for individual hospitalizations.

Other groups of records were found to encompass consecutive lengths of stays on the same patients. In these cases, it was imperative to combine all applicable observations into one uninterrupted LOS. Failure to do so would result in an inflated amount of cases with different "begin care" and "end care" dates. The combination of such records was necessary to eliminate the false assignment of higher PPS adjustment factors associated with earlier days of care, when the "begin care" dates of consecutive stays were actually continuations of previous care. For example, if such records are not combined prior to calculating PPS payment amounts, a patient with three separate records of consecutive 30-day stays (which in reality constitutes a single 90-day stay) would be assigned inflated PPS amounts due to the higher per diem PPS adjustment factors assigned for earlier days of care. 392 records fell into one of the three categories mentioned above (duplicates, separate payments, or consecutive stays), and were excluded or combined as indicated.

Three hundred and thirty five additional records were excluded from analysis for the following reason: Medicare becomes the primary payer for Tricare beneficiaries at the age of 65. At this time, Tricare acts as a supplemental

benefit to Medicare, under a program entitled Tricare for Life (TFL). This change in healthcare coverage has a significant effect on the payments that Tricare makes for its beneficiaries. For example, when all types of hospital bills are considered, the average TFL amount paid is approximately $700, compared with Tricare's average payment of over $4,000 for all other beneficiaries (WISDOM, 2005). The precise way that this matter impacted the records in the data set is discussed below.

After the data-cleansing performed to this point, TFL records represented 19.3 percent of the remaining 1735 records, but accounted for only 7.8 percent of Tricare's payments. For IPF care provided in the year 2005, TFL pays the $912 Medicare deductible for the first 60 days of care, $228/day for days 61-90, and $456/day for days 91-150 (Tricare Website, 2005). Because Medicare has become the primary payer, Tricare's payments for its TFL population should not be dramatically different under either PPS or the per diem payment system. Thus, to ensure appropriate comparisons were made for the most relevant portion of the Tricare population, TFL patients were excluded from analysis. Three hundred and thirty five records fell into this TFL category.

Following the exclusions and combinations described above, 1400 "clean" records of complete stays remained for analysis.

V. METHODOLOGY

The calculation of the IPF PPS payment is based on a single federal per diem base rate of $575.95, an amount which is updated annually by CMS. The rate includes all of the operating cost plus any routine and ancillary services that may be provided. The federal per diem base rate is divided into a labor-related portion and a non-labor related portion. The labor portion of the base rate is determined by multiplying 0.72247 by the base rate. The non-labor share is determined by multiplying 0.27753 by the base rate. Table 3 depicts the breakdown of the federal per diem rate into labor and non-labor shares.

Table 3. Breakdown of Federal Per Diem Base Rate

Federal Per Diem Base Rate	$575.95
Labor Share (.72247)	$416.11
Non-Labor Share (.27752)	$159.84

CMS performed extensive regression analysis to determine the relationship between the per diem costs and the patient and facility characteristics. Its purpose for conducting this research was to ensure that the IPF PPS accounts for each IPF case adequately (CMS, 2005).

The facility adjustments that an IPF may receive include a hospital wage index adjustment, a rural location adjustment, a teaching status adjustment, a COLA adjustment for IPFs in Alaska and Hawaii, and an emergency department adjustment. The patient-level adjustments include an adjustment for DRG, a comorbidity adjustment, an age

adjustment, variable per diem (length of stay) adjustment, and a payment for each ECT performed.

A. FACILITY LEVEL ADJUSTMENTS

1. Wage Index

The labor portion ($416.11) of the federal per diem base rate is adjusted for differences in providing care in different geographic areas. The IPF PPS will use the MSA as the basis for assigning weights to the labor portion of the base rate. MSA definitions came from a 1993 publication by the Office of Management and Budget (OMB).

2. Rural Location

In cases where the treating facility is located in a rural area, CMS provides a 17 percent payment adjustment. The payment adjustment is intended to offset the higher cost of providing care in these areas where the usually smaller size facility is not able to spread its fixed cost and does not enjoy an economies of scale advantage that a much larger facility would.

3. Teaching Adjustment

Another facility level adjustment applies to facilities that are considered teaching institutions. To determine the rate to apply, an institution must first determine its ratio of interns to residents. The adjustment is calculated by adding 1 to this ratio, and raising this number to the power of 0.5150. This calculation was determined by CMS using regression. For purposes of this analysis, the teaching adjustment was not

applied due to restrictions in the data, but is mentioned here to explain a possible payment adjustment methodology.

4. Cost of Living Adjustment (Alaska and Hawaii)

Facilities located in Alaska and Hawaii will receive an adjustment because of the disproportionately higher cost of providing care in these locations. The COLA adjustment is applied by multiplying the non-labor share of the federal per diem base rate by the COLA adjustment factor. The COLA factors were obtained by OMB and have been used in other PPS calculations. For this analysis COLA figures were used because the sample data includes records from Hawaii. Table 4 lists the COLA by state and the corresponding adjustment factors.

Table 4. COLA by State

Alaska	1.25
Hawaii, Honolulu County	1.25
Hawaii, Hawaii County	1.165
Hawaii, Kauai County	1.2375
Hawaii, Maui County	1.2375
Hawaii, Kalawao County	1.2375

5. Full Service Emergency Department

Finally, IPFs with a full service Emergency Department receive a facility level adjustment. The adjustment is intended to account for the higher costs of maintaining an Emergency Department. The adjustment is available only to acute hospitals that meet the following requirements:

- Is licensed by the state in which it is located as an emergency room or department

- Is held out to the public (by name, posted sign, advertising, or other means) as a place that provides care for emergency medical conditions on an urgent basis without requiring a previously scheduled appointment (IPF PPS Contractor Training Guide).

- During the calendar year a representative sample of patient visits indicated that at least one third of all outpatients who sought treatment did so on an urgent basis and were not required to have a previously scheduled appointment (IPF PPS Contractor Training Guide).

If it is determined that a facility meets the above requirements, it qualifies for a variable per diem (length of stay) adjustment of 1.31 on the first day of admission, as compared to the 1.19 day one adjustment for IPFs without a qualifying Emergency Department.

B. PATIENT LEVEL ADUSTMENTS

1. DRG ADJUSTMENTS

There are 15 DRG adjustment factors. For a complete list of each DRG with its corresponding adjustment factor see Table 1. Principal psychiatric diagnoses that do not fall into one of the 15 DRG categories will receive the federal per diem base rate ($575.95) and any other adjustments that may be applicable, but not the DRG adjustment for the stay. The basis for determining diagnosis should be the ICD-9-CM coding system.

2. Comorbidities

There are 17 adjustments that can be made for comorbidities. The comorbidities are identified by specific ICD-9-CM codes outlined in the published CMS final rule. The idea behind an adjustment for comorbidity is to

compensate facilities for additional medical conditions that are costly to treat. The treating facility can only receive one adjustment for each comorbidity category but it may receive an adjustment for more than one separate comorbidity category. See Table 5 for a list of the comorbidities and their corresponding adjustment factors.

Table 5. Comorbidities

Description of Comorbidity	Adjustment Factor
Developmental Disabilities	1.04
Coagulation Factor Deficits	1.13
Tracheostomy	1.06
Renal Failure, Acute	1.11
Renal Failure, Chronic	1.11
Oncology Treatment	1.07
Uncontrolled Diabetes Mellitus	1.05
Severe Protein Calorie Malnutrition	1.13
Eating Conduct Disorders	1.12
Infectious Disease	1.07
Drug and/or Alcohol Induced Mental Disorders	1.03
Cardiac Conditions	1.11
Gangrene	1.10
Chronic Obstructive Pulmonary Disease	1.12
Artificial Openings - Digestive and Urinary	1.08
Severe Musculoskeletal and Connective Tissue Diseases	1.09
Poisoning	1.11

3. Patient Age

CMS provides for an adjustment based on the patient's age at the time of admission. There are nine categories. Again the idea is that older patients will require a higher

degree of resources than younger patients. See Table 6 for a list of the age categories and their corresponding adjustment factor.

Table 6. Patient Age

Age	Adjustment Factor
Under 45	1.00
45 and under 50	1.01
50 and under 55	1.02
55 and under 60	1.04
60 and under 65	1.07
65 and under 70	1.10
70 and under 75	1.13
75 and under 80	1.15
80 and over	1.17

4. Variable Per Diem Adjustment

The variable per diem adjustments are added to the federal per diem rate to adjust for ancillary and administrative costs that are more costly in the earliest dates of an admission. In the final rule published by CMS, it was determined that the average per diem cost declined for patients until the 22nd day. As a result of their findings, CMS gradually decreased the day of stay adjustment factor until day 21. After day 21 the variable per diem adjustment remains constant. On day 1 of an admission if the treating facility has a qualifying Emergency Department, the adjustment factor is 1.31. However, if the treating facility does not have an Emergency Department, the adjustment factor for day 1 is 1.19. Table 7 depicts the day of stay and its corresponding variable per diem adjustment factor.

Table 7. Variable Per Diem Adjustments

Day-of-Stay	Adjustment
Day 1 IPF with a Full Service ED	1.31
Day 1 IPF without a Full Service ED	1.19
Day 2	1.12
Day 3	1.08
Day 4	1.05
Day 5	1.04
Day 6	1.02
Day 7	1.01
Day 8	1.01
Day 9	1.00
Day 10	1.00
Day 11	.99
Day 12	.99
Day 13	.99
Day 14	.99
Day 15	.98
Day 16	.97
Day 17	.97
Day 18	.96
Day 19	.95
Day 20	.95
Day 21	.95
Over Day 21	.92

5. Electroconvulsive Therapy Adjustment (ECT)

The IPF PPS provides a payment for each ECT treatment performed. This payment is adjusted by the wage index and COLA if applicable. In order to receive payment, revenue code 901, along with ICD-9-CM procedure code 94.27, must be documented. The payment amount before taking into account the wage index and COLA is $247.96. For purposes of this analysis, an ECT adjustment will not be calculated due to limitations in the data set provided, but will adjusted for in Chapter VII: Limitations and Adjustments.

C. PPS PAYMENT EXAMPLE

To explain the PPS payment methodology, the following hypothetical step by step payment example is provided. In this example the patient is a 74 year old male. He was

admitted to a non-teaching hospital in Honolulu County, Hawaii for an eight day LOS. The hospital does not have an Emergency Department. His principal diagnosis groups into DRG 427, Neurosis Except Depressive. During his stay he had three comorbid conditions. The ICD-9-CM codes for those conditions were 584.5 (acute renal failure with lesion of tabular necrosis), 391.0 (acute rheumatic pericarditis), and 041.1 (staphylococcus). The patient did not receive an ECT treatment. The following table summarizes the above information, and lists the appropriate adjustment factors.

Table 8. Payment Example

Type of Adjuster	Example	Adjustment Factor
Age	Patient Age = 74 years	1.13
DRG	Neurosis Except Depressive	1.02
Comorbidities		
	ICD-9-CM 584.5 Acute Renal Failure with Lesion of Tabular Necrosis	1.11
	ICD-9-CM 391.0 Acute Rheumatic Pericarditis	1.11
	ICD-9-CM 041.1 Staphylococcus	1.07
Rural Location	None	0
Variable per diem	15 days	0
COLA	Honolulu County, Hawaii	1.25
Teaching	None	0
Day 1	Facility without an ED	1.19
Day 2		1.12
Day 3		1.08
Day 4		1.05
Day 5		1.04
Day 6		1.02
Day 7		1.01
Day 8		1.01
Wage Index Factor	Honolulu, Hawaii (MSA 3320)	1.1013
Federal per diem base rate		$575.95
Labor portion of the Federal per diem base rate	.72247 * 575.95	$416.11
Non-Labor portion of the Federal per diem base rate	.27753 * 575.95	$159.84

1. Calculate the Total Wage Adjusted Rate

Step 1:

Multiply the labor portion of the federal per diem base rate by the wage index factor to get the adjusted labor portion of the federal per diem base rate.

($416.11 * 1.1013 = **$458.26**)

Step 2:

For patients that reside in Alaska or Hawaii, a COLA adjustment is required. This is computed by taking the non-labor portion of the base rate and multiplying it by the COLA adjustment factor. In this case the patient resides in an area where 1.25 is the COLA adjustment. (159.84 * 1.25 = **199.80**)

Step 3:

Add back the newly found adjusted labor portion of the federal per diem base rate to the non-labor portion of the federal per diem base rate. This number will represent the total wage adjusted rate for Honolulu, Hawaii.

($458.26 + 199.80 = **$658.06**)

2. Apply Facility and Patient Level Adjustments

The next step is to determine which facility and patient level adjustments are applicable to this patient's stay and apply them to get the PPS adjustment factor.

Step 1:

Identify all appropriate adjustments.

1. Teaching Hospital: None
2. Rural Adjustment: None

3. ECT Treatments: None

4. Age: 1.13

5. DRG: 1.02

6. Comorbidity

   a. Renal Failure, Acute: 1.11

   b. Cardiac Condition: 1.11

   c. Infectious Disease: 1.07

Step 2:

Multiply all the appropriate adjustments together to arrive at the PPS adjustment factor.

(1.13 * 1.02 * 1.11 * 1.11 *x 1.07 = **1.5195**)

Step 3:

Apply the newly found PPS adjustment factor to the total wage adjusted rate to find the adjusted per diem payment.

($658.06 x 1.5195 = **$999.92**)

3. Calculate the Variable Per Diem Adjustment

Step 1:

Determine the length of stay (LOS). As was noted earlier, the patient's LOS was determined to be eight days, and the facility was not equipped with an Emergency Department. As a result, the variable per diem adjustments would be:

Day 1: adjustment factor 1.19

Day 2: adjustment factor 1.12

Day 3: adjustment factor 1.08

Day 4: adjustment factor 1.05

Day 5: adjustment factor 1.04

Day 6: adjustment factor 1.02

Day 7: adjustment factor 1.01

Day 8: adjustment factor 1.01

Step 2:

Multiply the variable per diem adjustment factor by the PPS adjusted per diem to arrive at the total variable per diem amount.

Day 1: (adjustment factor 1.19) * $999.92 = $1,189.90

Day 2: (adjustment factor 1.12) * $999.92 = $1,119.91

Day 3: (adjustment factor 1.08) * $999.92 = $1,079.91

Day 4: (adjustment factor 1.05) * $999.92 = $1,049.91

Day 5: (adjustment factor 1.04) * $999.92 = $1,039.91

Day 6: (adjustment factor 1.02) * $999.92 = $1,019.92

Day 7: (adjustment factor 1.01) * $999.92 = $1,009.92

Day 8: (adjustment factor 1.01) * $999.92 = $1,009.92

Step 3:

Add up all of the variable per diem adjustments to determine the total PPS payment.

(**$8,519.29**)

The total federal per diem amount that would be paid for a 74 year old patient in Honolulu, Hawaii with the applicable adjustments applied would be $8,519.29.

THIS PAGE INTENTIONALLY LEFT BLANK

VI. RESULTS

This chapter presents the findings of the analysis of the sample of 1400 IPF claims and presents the results of the computation of the PPS payment using the methodology discussed in Chapter V. Methodology. Simple statistics were performed on the "cleaned" data to establish an idea of the distribution of the sample. Questions such as, how many observations of each DRG does the sample represent, or what is the age distribution of the sample, or in which states was care provided for the sample, are easily presented using statistical analysis. Statistical analysis was used to compute the average payment, standard deviation, variance and total payment for a given DRG under the per diem system and PPS. A t-statistic of the average per diem payment and the average PPS payment was performed, by DRG, to determine if the means of the population of differences between the per diem and PPS populations are significant at the 95 percent confidence level for each DRG. The data analyzed is paired, because, for every payment observed for a patient in the per diem system, there is a corresponding payment computed for PPS. The t-statistic for the mean of the population of differences will answer the question, is PPS equivalent to the per diem payment system.

Tables 9 and 10 below provide a description of the patient profile for the sample of data analyzed. The average age of a psychiatric patient in the analyzed sample is 26.5 years. This compares with an average age of 31.5 years for the overall Tricare inpatient psychiatric population (Covie, 2005). This difference is likely the

result of the exclusion of the 335 TFL patients from the sample analyzed. Forty eight percent of the sample analyzed is male while 52 percent is female. This compares with 36 percent male and 64 percent female for the Tricare inpatient psychiatric population (Covie, 2005). The average LOS for the sample analyzed is 10 days which compares with 7.3 days for the Tricare inpatient psychiatric population. The most frequently occurring comorbidities of the analyzed sample are drug/alcohol induced mental disorder, eating disorders, acute reaction to stress, and severe musculoskeletal and connective tissue disorders. Forty one of the 1400 records analyzed (2.9 percent) qualified for a comorbidity adjustment[3].

Table 9. Patient profile of the sample analyzed
Table 10.

	Percent	Mean	STD DEV
Male	48%		
Female	52%		
Age		26.5	15.13
LOS		9.98	21.67

Table 11. Most frequently occurring comorbidities

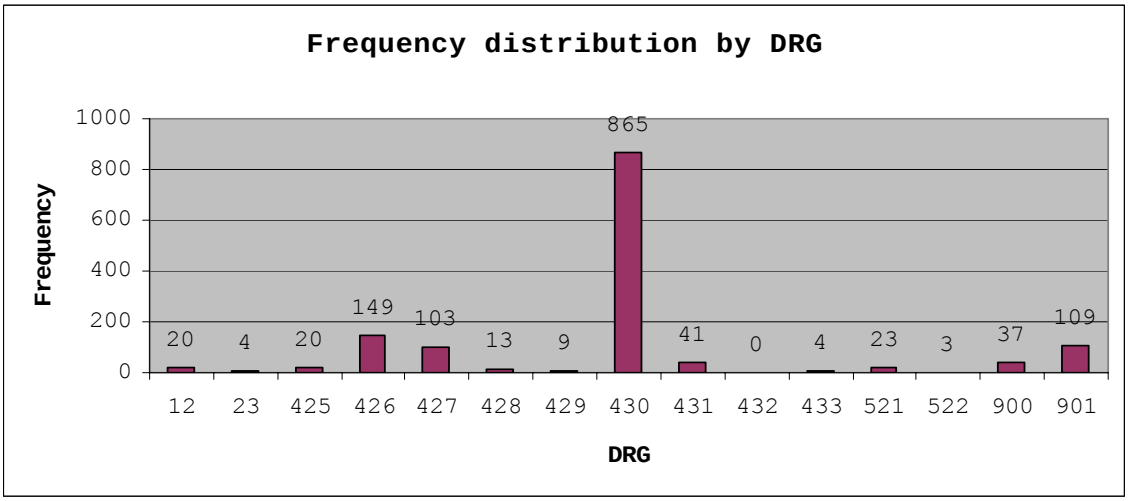
Comorbidity	Number of cases
Alcohol/Drug induced mental disorder	19
Acute reaction to stress	6
Eating disorder	11
Severe musculoskeletal and connective tissue disease	4

Figure 1 below shows the frequency distribution of the inpatient psychiatric sample used for this analysis. The range of the sample is from zero to 865, with zero

[3] The reason for so few comorbidities is likely due to coding omissions since facility is not paid for comorbidities under the per diem system.

observations for DRG 432 (Other Mental Health Disorders) to 865 observations for DRG 430 (Psychosis). The frequency distribution of the DRGs mimics the distribution of the population of inpatient psychiatric patients, in that the three most frequently occurring DRGs are DRGs 430 (Psychosis), 426 (Depressive Neurosis), and 901 (Alcohol/Drug without rehabilitation > Age 21) for both the analyzed sample and the inpatient psychiatric population (Federal Register, 2004). DRG 430 represents 61.7 percent of the analyzed sample, while 10.6 percent are DRG 426, and 7.7 percent are DRG 901. Compared with the Tricare inpatient psychiatric population, DRG 430 makes up 72 percent, DRG 426 represents 9 percent and DRG 901 accounts for 4 percent (Covie, 2005).

Figure 1. Frequency Distribution by DRG

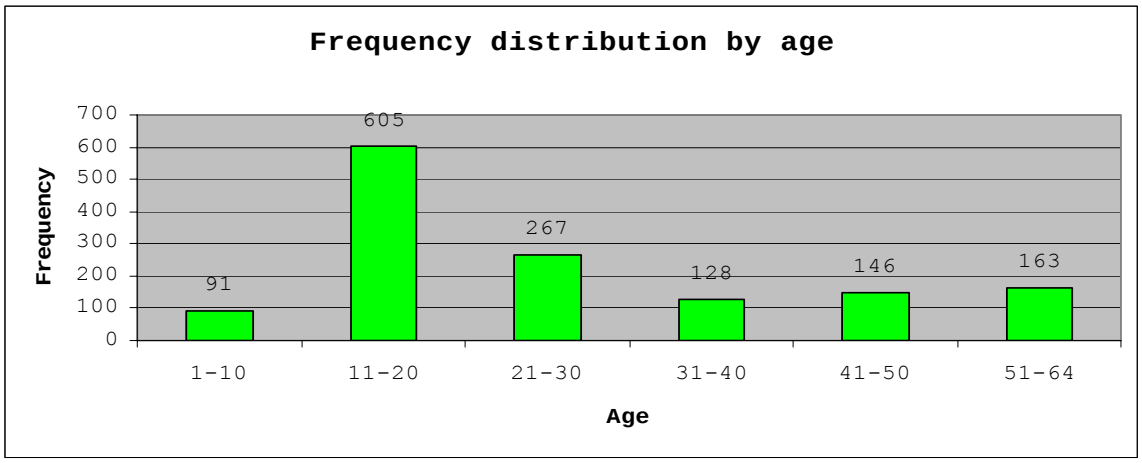


Note: See page 17 for DRG description

Figure 2 below displays the age frequency distribution of the sample analyzed. The range of the patient age is 63, with the minimum age diagnosed being one and the maximum age being 64. The median age is 21 and the most

frequently occurring age is 14. The standard deviation of the age distribution is 15.13, indicating that the mean age of 26.5 is a good descriptor of the ages of the psychiatric inpatients of the sample analyzed. 872 patients of the sample analyzed were between the ages of 11 and 30, indicating a younger inpatient psychiatric population. This is similar to the population treated by Tricare which primarily consists of healthy, younger, patients, usually with non-terminal illnesses.

Figure 2. Frequency Distribution by Age



The sample analyzed was taken from military catchment areas that accounted for greater than fifty percent of all medical institutional claims received by Tricare. TMA assumes that since these military catchment areas represent greater than fifty percent of all medical institutional claims received by Tricare, then correspondingly, a sample taken from these catchment areas for an inpatient psychiatric study should represent greater than fifty percent of the inpatient psychiatric claims received by Tricare. The catchment area around Colorado Springs, CO is

most represented in this sample of data with 475 psychiatric inpatients. The least represented catchment area in this sample is the Washington, DC/Bethesda, MD with 66 inpatient psychiatric patients. The number of sample observations representing each military catchment area is shown below in Figure 3.

Figure 3. Frequency Distribution by State

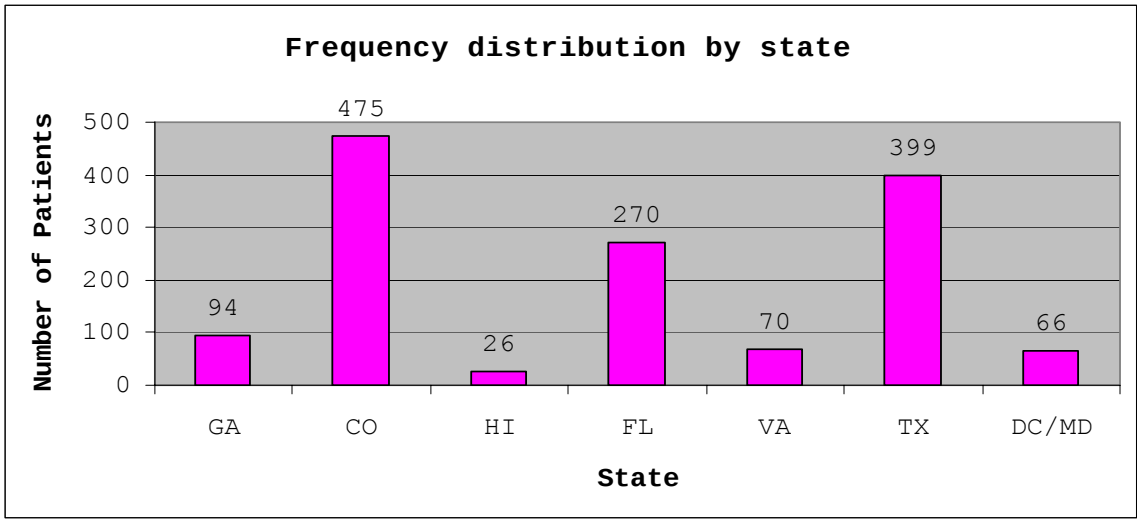


Figure 4 below shows a comparison, by DRG, between the average amounts allowed under the per diem system and the average payment using PPS. Microsoft EXCEL was used to sort the sample into groups by DRG and a descriptive statistical analysis was performed on each group of DRGs. Among other statistics, the descriptive statistical analysis gave the average amounts allowed by the per diem system and PPS for each DRG. Comparison of these two sets of averages shows that some DRGs tend to have a similar average amount allowed for the per diem system and PPS. DRGs 023, 426, 428, 433, 900 and 901 of this analysis displayed similar average payments for both the per diem

system and PPS. For example, the average per diem amount allowed for DRG 426 is $3,144. This compares with an average PPS amount of $3,458. There are 148 observations in this data sample for DRG 426. Most striking, however, is the differences in the average amount allowed by the per diem system and PPS for DRGs 012, 425, 429, 431 and 522. For example, DRG 012 has an average amount allowed under the per diem system of $15,632, compared with an average PPS payment of $7,318. In this case, the PPS average payment is lower. On the other hand, the average per diem amount allowed for DRG 431 is $9,412. This compares with $21,704 for the calculated PPS average payment. There are 41 observations for DRG 431 in this sample.

Figure 4. Per Diem and PPS Average Cost Comparison by DRG

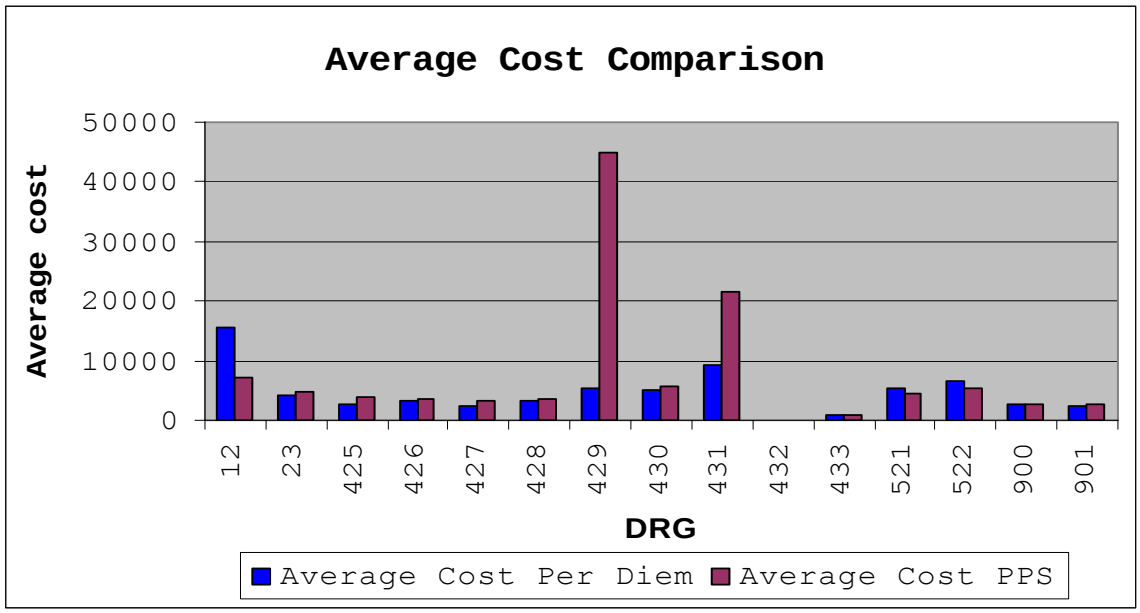


Table 11 below has a display of the standard deviations for each DRG under the reimbursement systems being compared. The standard deviation is a descriptor of

the mean. Do the computed means for each DRG typically represent the values of the observations in their respective DRGs? The per diem system for the sample analyzed has five DRGs whose standard deviations are greater than the mean. This indicates that for these five DRGs, the sample is widely dispersed and the mean does not adequately represent the typical values in the samples. When compared with PPS, there are eight DRGs with standard deviations greater than the mean, indicating that the mean does not adequately represent the typical values computed for PPS.

A t-statistic test was performed on each group of DRGs to determine if the mean of the population of differences is significant at the 95 percent confidence level. Since this is a matched paired sample, the difference between each per diem observation and corresponding PPS observation is computed. A two-sided t-test was intentionally used to avoid making the comparison that PPS is better, or worse, than the per diem system. The alternative hypothesis for the t-test is that the mean of the population of differences is not equal to zero. The null hypothesis, that the mean of the population of difference is equal to zero, would be rejected if $t < -t_{(\alpha/2,\ v)}$ or $t > t_{(\alpha/2,\ v)}$, where $t_{(\alpha/2,\ v)}$ is the critical value that the computed t-value cannot exceed, or fall below the negative of this value, at a confidence level of α with v degrees of freedom. The degree of freedom (v), assuming equal variances, is computed as $v = n - 1$, where n is the number of paired samples. Microsoft EXCEL, which assumes equal variances, was used to perform the t-statistic.

Table 12. T-statistic for Comparison of Per Diem and PPS

	Per diem		PPS				
DRG[4]	Avg Cost	STD Dev	Avg Cost	STD Dev	Per diem - PPS	t-stat	# of samples
Degenerative Nervous System Disorders	15632	22003	7318	6348	8314	2.1555**	20
Non-traumatic Stupor & Coma	4288	2606	4726	6594	(437)	-0.1264	4
Acute Adjustment Reaction	2729	2147	3749	6607	(1020)	-0.6609	20
Depressive Neurosis	3144	6804	3458	6343	(314)	-1.1309	149
Neurosis Except Depressive	2542	4479	3266	6237	(724)	-2.0665**	103
Disorders of Personality	3317	2609	3613	2381	(295)	-0.6275	13
Organic Disturbances	5469	1884	44912	44886	(39444)	-2.6611**	9
Psychosis	5003	7137	5661	8409	(658)	-5.8564**	865
Childhood Disorders	9412	11772	21704	29488	(12291)	-2.8127**	41
Alcohol/Drug Use (LAMA)	997	567	948	802	49	0.2368	4
Alcohol/Drug Use With Comorbid Conditions	5241	4669	4394	3554	847	1.5172	23
Alcohol/Drug Use Without Comorbid Conditions	6500	5336	5372	3692	1127	1.1501	3
Alcohol/Drug Use Without Rehabilitation (≤Age 21)	2701	2197	2609	2018	92	0.6723	37
Alcohol/Drug Use Without Rehabilitation (>Age 21)	2460	2321	2788	3129	(327)	-1.5310	109
Total	4594	7285	5608	10441	(1013)	-4.7896**	1400

** Statistically significantly different from zero at 5 percent level.

Note: There were no other DRGs statistically significantly different from zero at 10 percent level.

[4] Refer to Table 1, inpatient psychiatric DRG, for the corresponding DRG codes

Table 11 above is a display of the t-statistic computation. The table shows that the computed t-statistic for DRGs 012, 427, 429, 430, and 431 fall into the rejection region, thereby causing a rejection of null hypothesis. This indicates that the means of the population of differences for these DRGs are statistically significant at the 95 percent confidence level. Although it can be inferred that PPS is equivalent to the per diem system for DRG 023, 425, 426, 428, 433, 521, 522, 900 and 901, the sample size for these DRG groups are quite small. Further, t-stat analysis of the entire sample shows that the t-stat value falls well within the rejection region, showing that the per case payment is about $1,013 more expensive under PPS than under the per diem system.

Table 12 below shows the total cost comparison for the sample analyzed under the per diem payment system and the computed PPS. The total per diem payment ($6,432,289) represents the sum of the payments made by Tricare ($5,740,487) plus the total of all other payments ($691,802), which includes other health insurance (OHI) and patient cost share payments (co-pays). For the purposes of this analysis, it is assumed that OHI and co-pays will be unchanged between the two payment systems. The total PPS payment is the amount that this analysis computed for the sample of 1400 observations given the adjustment factors and conditions explained in Chapter V. Methodology.

Table 13. Total Cost Comparison

	Total Payment (1400 records)	**Average Payment** (Total ÷ 1400)
Per Diem (Status Quo)	$6,432,289	$4,594
PPS	$7,850,992	$5,608
Additional Cost of PPS	+ $1,418,703	+ $1,014

VII. LIMITATIONS AND ADJUSTMENTS

At face value, the figures presented in Table 12 suggest that under PPS, Tricare would experience a total increased cost of $1,418,704 for the 1400 claims in the data sample. This represents an average cost increase of $1,014 per case. However, the calculations that led to these results tell only part of the story, as they are somewhat constrained by specific limitations in the data available for analysis.

This chapter presents several limitations encountered during the course of this study, including six primary limitations for which payment adjustments could be made. The five most applicable and identifiable adjustments are summarized in Table 13, which demonstrates the susceptibility of relying solely on the unadjusted figures presented in Table 12. The limitations encountered fall into three general categories: (1) Limitations of Sample Selection, (2) Limitations of Data Availability, and (3) Miscellaneous Limitations.

A. LIMITATIONS OF SAMPLE SELECTION

Although 1400 IPF hospitalizations were analyzed for the purposes of this analysis, the data sample did not include representation from a small, though relevant, percentage of military healthcare beneficiaries. The data records were pulled from seven selected military treatment facility catchment areas, all which lie within urban locations. As a result, Tricare beneficiaries who are treated in rural IPFs are not accounted for in this study.

TMA has identified that approximately 90 percent of all relevant IPF claims come from urban facilities. As such, the data sample analyzed represents the vast majority of the claims which would be relevant to TMA's ultimate decision regarding whether or not to implement Medicare's IPF PPS. However, although it is reasonable to presume that the occurrence and morbidity of rural IPF stays is similar to those found within urban IPFs, the same cannot necessarily be said for the costs of this care, or for the reimbursement that would be made under PPS.

Medicare PPS pays a 17 percent adjustment factor to rural IPFs, in order to cover the higher costs associated with this care. Without data representing the estimated 10 percent of rural IPF claims, an approximation was calculated as an adjustment to the PPS payment presented in Table 12. This was derived from taking the averages of the PPS payments calculated from the sample data, calculating the expected PPS payments for similar visits within rural IPFs, and incorporating this calculation so that it amounted to 10 percent of all (urban and rural) IPF stays.

To illustrate, the average per diem payment within the data set was $4,594, compared to a $5,608 average PPS payment. As previously indicated, this preliminary figure suggests a $1,014 increased cost per IPF hospitalization under the PPS system. However, with the incorporation of a 1.17 adjustment factor into the PPS calculation formula, the average payment at rural IPFs increases another $544 to $6,152. At 10 percent of expected encounters, this consideration increases the overall (urban and rural) average PPS payment by $54.43 to $5,662.40 [(5,608 * .9) + (6,152 * .1)]. At 1,400 total cases, a $76,202 adjustment

(1,400 * 54.43) could be made to the previously presented PPS calculation. The result of this consideration is demonstrated in Table 13 below. It is important to note that this adjustment is relevant primarily under the assumption that case mixes and morbidities are not significantly different based upon geographic factors, and that Tricare's current per diem payments are also not significantly influenced by the geographic location of care.

B. LIMITATIONS OF DATA AVAILABILITY

The Medicare IPF PPS applies payment adjustments for 10 separate variables. Each variable is relevant in the consideration of what Tricare would pay if it adopts Medicare's PPS system without deviation. This section discusses the details of five variables which TMA did not have the ability to identify in the data set provided, and describes what was done to account for these omissions.

1. Emergency Department (ED) Adjustment

TMA was not able to identify which records within the data set were from IPFs which maintained a qualifying ED. Thus, all records were initially given a Day 1 variable per diem adjustment factor of 1.19, rather than the 1.31 Day 1 adjustment factor that PPS provides to IPFs with a qualifying ED. With the 1.19 Day 1 adjustment factor applied to all cases in the data set, the calculated Day 1 PPS payments totaled to $929,542.

To adjust for the absence of ED information, an estimate was made of the likely additional payment amount relevant to the data set in question. First, a sensitivity

analysis was performed, in which all records were assigned the 1.31 Day 1 adjustment factor given to IPFs with a qualifying ED. This resulted in calculated Day 1 PPS payments totaling $1,023,278, demonstrating the potential for up to $93,736 ($1,023,278 – $929,542) of additional PPS payments not accounted for in the figures demonstrated in Table 12.

To determine what portion of this $93,736 applied to the data in question, information was obtained from the CMS Provider Specific File. Although this file does not yet represent all IPFs under PPS, CMS suggests that 75 percent of IPFs are likely to maintain a qualifying ED (Quarrick, 2005). Thus, under the assumption that 75 percent of the IPFs in the data set qualify for the 1.31 Day 1 adjustment factor, a $70,302 ($93,736 * .75) adjustment was applied. This adjustment increased the average PPS payment an additional $50.22, as demonstrated in Table 13 below.

2. Teaching Facility Adjustment

The data set analyzed also did not identify which records came from IPFs which qualify as teaching institutions. Data from CMS demonstrates that 13.75 percent of IPFs qualify for an average teaching facility adjustment of 1.085 (Quarrick, 2005). In a manner similar to what was done to account for unavailable ED information, these figures were used to calculate a $49,065 overall adjustment. When applied to the previous calculations, this adjustment increased the average PPS payment an additional $35.05, as demonstrated in Table 13.

3. Electroconvulsive Therapy (ECT) Adjustment

The data set analyzed did not include information regarding ECT treatments performed. However, additional information from TMA revealed that 1.3 percent of Tricare's IPF patients received up to 2 ECT treatments during their IPF stays. Additional research regarding the utilization of ECT treatments demonstrates an average of 1.6 ECT courses per patient treated with ECT (Hermann, 1999). Using this information, an estimated 29.12 ECT treatments (1400 * 1.3% * 1.6) were assumed to have been performed on the patients within the sample analyzed.

The average PPS payment for ECTs, given the area and wage index adjustments of the sample, is $241. Thus, the incorporation of the 29.12 estimated ECT treatments into the data sample adds $7,018 to the estimated PPS payment calculation. This amount increases the average PPS payment by $5.01, and is demonstrated in Table 13 below.

4. Outlier Payments

The Medicare IPF PPS also makes outlier payments for stays in which costs exceed an adjusted threshold amount. Because the data set did not include IPF costs or charges (only amounts allowed and paid by Tricare), it was not possible to calculate the exact outlier payments associated with these stays.

To account for the unavailability of cost/charge information, an estimate was made of the range of potential outlier payments associated with the data set provided. This estimation was derived from information published by CMS, which estimates that five percent of IPF cases qualify for an average outlier payment of $3,248 (CMS, 2005). When

applied to the 1,400 records examined, this amounted to a $227,360 potential adjustment (1,400 * .05 * 3248), for a $162.40 increase to the average PPS payment.

However, additional information from CMS indicated that patient age was a significant variable in explaining cases with higher costs. Not surprisingly, patients under the age of 65 had fewer comorbid conditions, and were significantly less costly to treat. Because the outlier payment adjustment calculated above is likely much higher than the outlier liability that Tricare would face for the younger population analyzed for this study, this adjustment was not applied to Table 13. It should be understood that some amount in outlier payments would be made, but because IPF cost/charge data was not available, the extent of this liability is outside the scope of this study.

5. Length of Stay (LOS) Limitations of Eligibility

The adjustments to account for the constraints discussed thus far each have had the effect of increasing the potential payments under PPS. The LOS limitation discussed in this section, however, will demonstrate a dramatic potential reduction in the projected PPS payments, particularly for DRG 429 and DRG 431. The amount of this potential downward adjustment is greatly influenced by a variable which was not demonstrated in the data sample.

The Tricare health benefit has limitations on the LOS durations for which it will typically reimburse. For mental health inpatient services, this limit is set at 60 days per calendar year (TRM, 2002). However, TMA indicated that these limits can be extended, when deemed appropriate. This seemed to be evident in the data, as various records

with LOS greater than 60 (including two records with LOS > 100) received a per diem payment that exceeded the average daily PPS payment calculated for the same LOS, without consideration of a LOS limitation. However, several other cases demonstrated substantially lower per diem payments. Without data indicating which claims did not receive extensions of this 60-day LOS limit, no records were removed from analysis for this reason alone. However, this section demonstrates the potential sensitivity of excluding records that exceed this 60-day LOS limit.

Thirty seven of the 1400 analyzed records had a LOS greater than 60 days. The calculated payment difference between these records alone amounted to $1,069,880. If all these records had been removed from the analysis, the cost of implementing PPS demonstrated in Table 12 would have dropped 75 percent, from $1.42 million to $0.35 million, or an average cost per case $256 greater than the per diem payment, rather than the $1,014 figure demonstrated in Table 12. However, as previously stated, several of these records demonstrated per diem payments greater than the calculated PPS payment, and many more showed per diem payments only a small percentage lower than the calculated PPS payment. Thus, a "50 percent rule" was applied to estimate the adjustment for this constraint, as explained below.

Thirteen of the 37 records with a LOS greater than 60 days demonstrated per diem payments which were at least 50 percent lower than the calculated PPS payments. These 13 records accounted for 85 percent of the $1,069,880 figure presented above. Six of these records, accounting for $467,266 of the calculated payment difference, were

assigned to DRG 431 (Childhood Disorders). Four records, accounting for $343,827, were assigned to DRG 429 (Organic Disturbances). Two records, accounting for $64,238, were assigned to DRG 430 (Psychosis). The final record, which accounted for $35,389 of the calculated payment difference, was assigned to DRG 427 (Neurosis Except Depressive). Interestingly, all 13 of these records were on patients 17 years old and younger.

All other adjustments discussed previously in this chapter could not be delineated by DRG, thus were distributed evenly across all DRGs in Table 13 below. The LOS limitation adjustment, however, was identifiable by DRG, and thus was distributed accordingly.

Table 14. Effects of Adjustments

DRG	% of cases	Avg PPS Payment	Adjustments					Adjusted PPS Payment	Avg Per Diem Payment	Per Case Savings from PPS
			Rural	ED	Teach.	ECT	LOS Outliers			
012	1.4%	$ 7,318	$54	$50	$35	$5	n/a	$ 7,463	$ 15,632	$ 8,169
023	0.3%	$ 4,726	$54	$50	$35	$5	n/a	$ 4,871	$ 4,288	$ (583)
425	1.4%	$ 3,749	$54	$50	$35	$5	n/a	$ 3,894	$ 2,729	$ (1,165)
426	10.6%	$ 3,458	$54	$50	$35	$5	n/a	$ 3,603	$ 3,144	$ (459)
427	7.4%	$ 3,266	$54	$50	$35	$5	($344)	$ 3,066	$ 2,542	$ (524)
428	0.9%	$ 3,613	$54	$50	$35	$5	n/a	$ 3,758	$ 3,317	$ (441)
429	0.6%	$ 44,912	$54	$50	$35	$5	($38,203)	$ 6,854	$ 5,469	$(1,385)
430	61.8%	$ 5,661	$54	$50	$35	$5	($74)	$ 5,732	$ 5,003	$ (729)
431	2.9%	$ 21,704	$54	$50	$35	$5	($11,397)	$ 10,452	$ 9,412	$(1,040)
433	0.3%	$ 948	$54	$50	$35	$5	n/a	$ 1,093	$ 997	$ (96)
521	1.6%	$ 4,394	$54	$50	$35	$5	n/a	$ 4,539	$ 5,241	$ 702
522	0.2%	$ 5,372	$54	$50	$35	$5	n/a	$ 5,517	$ 6,500	$ 983
900	2.6%	$ 2,609	$54	$50	$35	$5	n/a	$ 2,754	$ 2,701	$ (53)
901	7.8%	$ 2,788	$54	$50	$35	$5	n/a	$ 2,933	$ 2,460	$ (473)
All	**100%**	**$ 5,608**	**$54**	**$50**	**$35**	**$5**	**($651)**	**$ 5,102**	**$ 4,594**	**$ (508)**

C. MISCELLANEOUS LIMITATIONS

Table 13 above summarizes the adjustments made for the most applicable limitations previously discussed. However, other uncertainties presented themselves in the course of this study. Although quantitative adjustments were not included in Table 13 for these constraints, it is important that they be discussed here to ensure that users of this report are fully aware of the assumptions which led to this study's results.

1. "Amount Allowed" Data Field

The data set received from TMA included eight fields of financial data with the following titles: (1) "Amount Allowed", (2) "Amount Paid", (3) "Amount Allowed Other Health Insurance (OHI)", (4) "Amount Paid by OHI", (5) "TPL Amount", (6) "Coinsurance", (7) "Co-payment", and (8) "Pt Cost Share". The "Amount Allowed OHI" field was eliminated because only the "Amount Paid by OHI" data was relevant to how Tricare's payment would be affected. The "TPL Amount" field was also eliminated, because it contained no data for any of the 3085 original records.

The four fields which encompassed all payments other than Tricare's ("Amount Paid by OHI", "Coinsurance", "Co-payment", and "Pt Cost Share") were combined into a single field entitled "Total Other Payments". Thus, after renaming the first two fields, the three fields of financial data that remained included "Tricare Allowed", "Tricare Paid", and "Total Other Payments".

The initial analysis of the data was conducted under the assumption that the "Tricare Allowed" amount was the payment for which Tricare is responsible under its current

system, after subtracting the amounts paid from the "Total Other Payments" field. Thus, for the records in which no other payments were made, the "Tricare Allowed" amount should equal the "Tricare Paid" amount. Correspondingly, for those records with other payments, the "Tricare Allowed" amount should equal the sum of the amounts in the "Tricare Paid" and "Total Other Payments" fields. 1182 of the 1400 analyzed records met these criteria.

Information was sought to identify the reason(s) why the amounts described above did not add up as expected for the 218 remaining records. Further discussion with TMA revealed that the amounts indicated in the "Tricare Allowed" field may not actually indicate the payment for which Tricare is responsible. Factors such as failure to receive pre-authorization, uncovered care, or other variables could result in Tricare not covering some portion of what is contained in this field. Following this revelation, the original "Tricare Allowed" field was replaced with the sum of the "Tricare Paid" and "All Other Payments" fields. This amount is what was used in the final comparison as the payment for which Tricare would be responsible, assuming no other payments, under its current per diem IPF payment system. The PPS payment compared to this payment also assumed no other payments, so that a compatible comparison could be made.

Although 84.4 percent of analyzed records had "Allowed" (A) amounts equal to the sum of "Tricare Paid" (TP) and "Total Other Payments" (TOP), the sum of the payment differences ($\Sigma(A-(TP+TOP))$ for the 218 remaining records totaled $1,038,049. This is worth mentioning particularly because when these potential per diem payments

were included in the original comparison of the two payment systems, the average per diem payment was $742 higher than what is demonstrated in Table 12. This alternative per diem payment result is still $272 lower than the average calculated PPS payment, but the fact that it more closely resembles the projected PPS payment is considered noteworthy.

Because the original data set contained an "Amount Allowed" field which, upon further investigation, was deemed irrelevant to the purpose of this analysis, it raised some concern to the authors of this study. Believing the decision - to include the 218 records with unexplained differences between "Amount Allowed" and total payments - may have erroneously skewed the results, this analysis conducted another t-statistic test. This second test excluded all records where the "amount allowed" by Tricare did not equal the sum of the amount paid by Tricare and the total other payments. Table 14 below shows the comparison of the t-statistic for the 1400 records with the computed per diem "amount allowed" and the 1182 records without any delta between the "amount allowed" and the sum of the Tricare payments and total other payments.

Table 15. T-Stat Comparison With/Without Delta's

	Per diem		PPS				
Records	Avg Cost	STD Dev	Avg Cost	STD Dev	Per diem – PPS	t-stat	# of samples
ALL	4594	7285	5608	10441	(1013)	-4.7896	1400
ALL-DELTA	4192	6599	5131	9763	(939)	-4.3030	1182

Table 14 shows that even though the 218 samples described above were included in the analysis, their presence did not significantly impact the outcome of this study. The most significant impact of their inclusion was an increase in average cost for both per diem and PPS. With a sample size of 1400 the t-statistic is a smaller value when compared with the sample of 1182 records. This supports the inference that with a larger sample size the probability of rejecting the null hypothesis is even greater. Regardless, the comparison of the t-statistics for the different sample sizes supports the conclusion that the inclusion of the 218 samples did not alter the integrity of the study.

2. Susceptibility to Human Error

As discussed in Chapter IV, the data cleansing process included the combination of over 300 records which were identified as having concurrent LOS, thus constituting individual episodes of IPF hospitalization. Because the database from which the data set originated could not combine claims into individual stays, these records were manually identified and combined by the authors of this study. As a result, there is an increased likelihood that human error may have resulted in inaccuracies in the data compilation process.

VIII. DISCUSSION AND RECOMMENDATIONS

As Table 11 indicates, the difference between per diem payments and PPS payments suggests an average additional cost of $508 per case if PPS were implemented. This figure represents an 11 percent increase over the average per diem payment of $4,594.

At this point, it is important to restate the scope of this project, upon which the final recommendation is based. Because the analysis is limited to the direct and quantifiable financial implications Tricare would face by adopting Medicare's IPF PPS, other important decision criteria are not considered. Although not factored into the recommendation of this study, the behavioral implications of implementing a PPS payment system should be taken into account when a final decision is made. These behavioral implications include the issues of up-coding, cherry-picking, and variations in LOS.

A. CHERRY-PICKING

The term "cherry-picking" refers to the practice of selecting patients based on the treating facility's ability to recover the highest reimbursement amount in the shortest period of time. In other words, patients that are costly to treat are not as lucrative and less desirable for the treating facility in terms of reimbursement. As a result, a facility's inclination would be to selectively choose (cherry-pick) the patients that will be the most profitable. The practice of cherry-picking would be more prevalent in the per diem system than in PPS, because PPS makes adjustments for more expensive cases which reduces

the incentive for a facility to cherry-pick inpatient cases. The behavioral implication of selecting the per diem system is an increase in the probability that facilities may participate in the practice of cherry-picking.

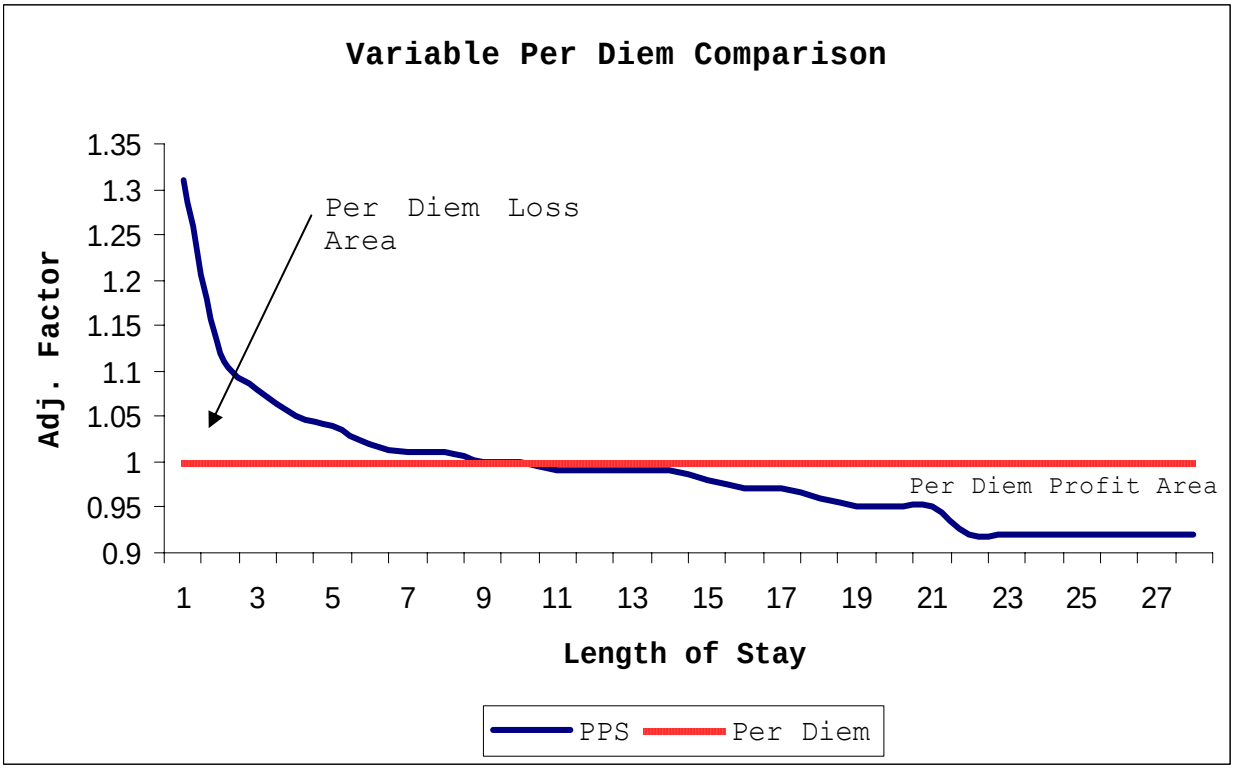
B. UP-CODING

The treating facility is reimbursed for an inpatient stay at a fixed rate based on the PPS calculation, which does not necessarily coincide with the treating facilities cost. The DRG code and patient comorbidities are derived using the patients' record as a guide. Errors that result from improperly recording DRG or comorbidity codes can have a substantial financial impact on PPS reimbursement. Coding errors can be unintentional or intentional in nature. Unintentional errors are those where an incorrect code was entered due to a clerical mistake. However, intentional errors may be recorded to obtain the maximum reimbursement available. This is referred to as up-coding. The behavioral implications of implementing PPS would be the possibility of increasing the likelihood that facilities would up-code procedures to receive the higher reimbursement rate. This would not be an issue in the per diem system, where DRG and comorbidity codes are not used to determine reimbursement. However, the inability to incorporate comorbidity adjustment into the current payment system is more likely to aggravate cherry-picking behavior as discussed above.

C. LENGTH-OF-STAY

Under the PPS system a treating facility receives an amount per day that gradually declines over the length-of-stay, representing the decreased costs required to care for a patient over time. The payments under the per diem system do not decline over time, but remain constant. Reimbursement in the per diem system can be represented by a straight line, as demonstrated in Figure 5.

Figure 5. Variable Per Diem/PPS Comparison



As the figure graphically depicts, a patient with a lower LOS will generate higher compensation under the PPS system compared to a patient in the per diem system during short stays. However, after a patient exceeds a certain LOS, the per diem system will have a higher payment. The

incentive for a per diem system would be to discharge a patient after its costs to treat that patient have been recovered, rather then when it becomes medically feasible. Delaying discharge in hopes of deriving more profit is a potential negative implication of the per diem system.

D. QUALITY OF CARE IMPLICATION

From a cost standpoint it appears that the current Tricare per diem system is a less expensive method of reimbursement. The result of this conclusion has directed the authors to speculate on one possible implication of continuing with the current per diem system. The authors speculate that because the Tricare system would be paying less than Medicare for inpatient psychiatric care (and also less than private insurers), quality providers may be less inclined to accept Tricare eligible patients. If quality providers begin rejecting Tricare patients or make access to care more difficult for Tricare patients, those patients may not receive quality care, and the delay to treatment may increase the health care cost in the long run.

E. FINAL RECOMMENDATION

The scope of this analysis was to provide Tricare Management Activity with a financial analysis of PPS. Subject to the indicated limitations the authors conclude that on average PPS will cost $5,102 per case, compared to $4,594 per case on the per diem basis. This results in an additional reimbursement cost of $508 per case under PPS. Keeping the limitations in mind, this analysis did not find evidence to support a decision to convert from Tricare's per diem payment system to Medicare's PPS.

IX. ADDITIONAL RESEARCH

As indicated, the authors of this study recommend additional research be conducted on this topic. The primary benefits of such research would include: (1) the ability to independently corroborate, or dispute, the results of this study based upon updated information, and (2) the ability to retrieve additional data, as it comes available, to replace the assumptions made in this analysis with exact adjustments based upon actual data plugged into the PPS calculation.

Any further analysis should begin with new parameters for the data being pulled, and the manner in which it is demonstrated. Because there are numerous variables which would affect Tricare's liability if it were to adopt Medicare's IPF PPS, Tricare should begin to collect data on each of these variables as soon as practical. The fact that Medicare has already begun to implement its IPF PPS suggests that IPFs already have the capability to incorporate this data into their claims submitted to Tricare. Although it is understood that limitations will present themselves with any similar analysis, the table below summarizes a more optimal demonstration of data for future examination in this area.

Table 16. Optimal Data Fields for Additional Research

Data Fields / Sample Selection	Included in Data Set for this Study?	Comments
Patient Identifier	Yes	
Patient Age	Yes	Calculated from Date of Birth field.
Patient Sex	Yes	
Other Pt Demographics	No	To compare to overall population & verify proper representation.
Location of Care	Yes	By zip code & state. MSA would help.
Medicare Indicator	No	Although all pts ≥ 65 yrs can be ID'd, many disabled < 65 yrs are Medicare beneficiaries.
Admission Date	Yes	
Begin Care Date	Yes	
End Care Date	Yes	
DRG	Yes	
Comorbidities	Yes	Limited to 2 comorbidities. Medicare adjusts PPS payments for all identified.
Billed Amt; IPF Cost-to-Charge Ratio	No	Necessary to calculate outlier payment liability, not identified in this study.
ECT Treatments	Yes	Rcvd averages; Actual from data preferred.
Teaching IPF Identifier	No	Would allow calculation of actual teaching facility adjustment/payment, vice assumption.
Intern/Resident ratio	No	Needed to calculate exact teaching adjustment.
ED Identifier	No	To ID true Day 1 ED adjustment calculation.
Tricare Payment	Yes	
Other Payments	Yes	Including OHI, Patient Cost-Share, etc.
Regional & Specific Per Diem Rates	No	With information ID'd above, would support validation of institutional pymt data received.
Rural IPF visits	No	Future study should aim for proper representation from each segment of Tricare population, including estimated 10% rural.
LOS Limit Indicator	No	If achievable, an indication of which records reached LOS limit, and which day, would assist accurate calculation of applicable PPS payment.

LIST OF REFERENCES

American Medical Association. 2005 International Classification of Diseases; 9th Revision; Clinical Modification. (July 2004) Ch.5.

Baker, Judith J. "Medicare Payment System for Hospital Inpatients: Diagnosis-Related Groups." Journal of Health Care Finance 28 (Spring 2002).

Bureau of Medicine and Surgery (BUMED). Working Information Systems to Determine Optimal Management (WISDOM) Course Guidebook. (June 2005)

Centers for Medicare and Medicaid Services http://www.cms.hhs.gov/providers/hipps/ippswage.asp. (August 2005)

Centers for Medicare and Medicaid Services. IPF PPS Contractor Training Guide (January 2005): p.37.

Cotterill, Philip G., Thomas, Frederick G. "Prospective Payment for Medicare Inpatient Psychiatric Care: Assessing the Alternatives." Health Care Financing Review 26 (Fall 2004): 85-101.

Covall, Mark. "Medicare Prospective Payment Comes to Psychiatric Hospitals." Behavioral Health Management 25 (Jan/Feb 2005): 54-56.

Federal Register. "42 CFR Parts 412 and 413 Medicare Program; Prospective Payment System for Inpatient Psychiatric Facilities; Final Rule." Centers for Medicare and Medicaid Services. (November 2004).

Hermann, Richard C, et al: Diagnoses of Patients Treated With ECT: A Comparison of Evidence-Based Standards With Reported Use. Psychiatric Services 50:1059-1065, 1999

Quarrick, Matthew. Social Science Research Analyst, Centers for Medicare and Medicaid Services. Telephone Interview of November 1 2005.

Tieman, Jeff. "It Was 20 Years Ago Today." Modern Healthcare 33 (2003): p.6.

Tricare Policy Manual 6010.54-M, Chapter 6, Section 2 Tricare Management Activity (August 2002)

Tricare Policy Manual 6010.54-M, Chapter 7, Section 3 Tricare Management Activity (August 2002)

Tricare Reimbursement Manual 6010.55-M, Chapter 7, Section 1 Tricare Management Activity (August 2002)

Tricare Website: TFL Cost Matrix. http://www.tricare.osd.mil/tfl/tflcostmatrix b.html. (April 2005)

Zwanziger, Jack, et al. Prospective Payment for CHAMPUS Exempt Services; An Analysis of Children's Hospitals, Substance Abuse Services, and Psychiatric Services. RAND National Defense Research Institute. (1992): p.v.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California

3. Christine Covie, MSHA, PMP
   The Department of Defense, TMA-Aurora
   Aurora, Colorado

4. Professor Yu-Chu Shen
   Naval Postgraduate School
   Monterey, California

5. Professor Richard Doyle
   Naval Postgraduate School
   Monterey, California